

Bird Inventories and Monitoring



in the Northern Great Plains NPS Network



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Rocky Mountain Bird Observatory





Objective:



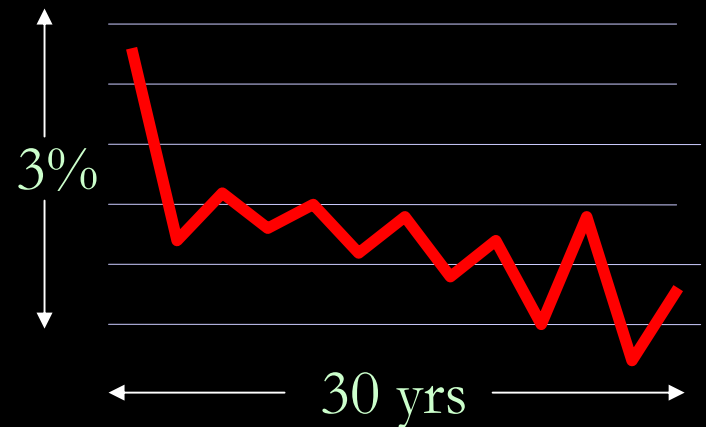
Inventory

- Document 90% of bird species expected to occur in each of 7 parks
 - Should allow inference of relative abundance
 - Update on status of previously documented species
- Points-transects also used for long-term trend monitoring



Long-term Trend Monitoring

- Point-transects
 - Data can be pooled with regional monitoring program (Black Hills)
 - Designed to minimize bias
- Minimum Monitoring Target:
 - Detect $\geq 3\%$ change in ≤ 30 yrs
 - 80% power & 90% certainty
 - 30 yrs for low-density/ sporadic spp ($CV \leq 100\%$)
 - less time for more common species ($CV \leq 50\%$)



Methods

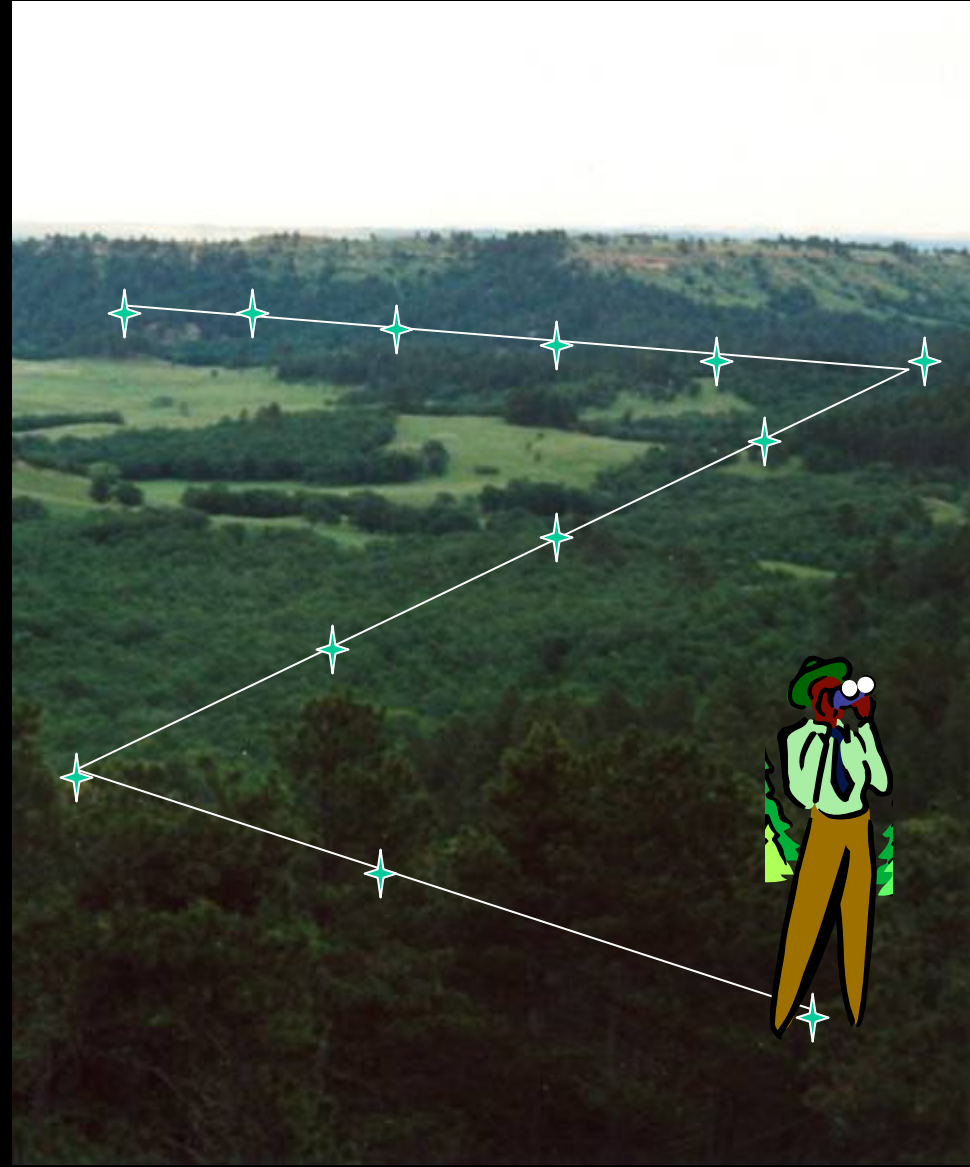
- Point-transect surveys
- Targeted habitat searches
- Species-specific call-response surveys

Key to thorough bird inventory is time—i.e., extended/multiple visits



Methods

- Point-transect surveys
 - habitat based
 - random sampling
 - 15 5-min counts
 - 250 m intervals
 - line-transect for low-density species (3.5 km)
 - Distance-sampling
 - vegetation assessments
 - count stations marked by GPS



Methods

- Targeted habitat searches
 - focus: suitable habitat for expected spp., limited habitats not covered by point-transects
 - non-standardized protocol; allows flexibility
 - generally more time intensive (& thorough) than point-counts



Methods

- Call-response surveys
 - Primarily for nocturnal species; also rails, raptors, woodpeckers
 - Recordings of breeding vocalizations
 - targeted in suitable habitat for expected species
 - standard protocol for playing and listening



7 NPS units selected for I&M work:

- **Mount Rushmore N.M.**
- **Devil's Tower N.M.**
- **Jewel Cave N.M.**
- **Wind Cave N.P.**
- **Fort Laramie N.H.S.**
- **Fort Union Trading Post N.H.S.**
- **Knife River Indian Villages N.H.S.**

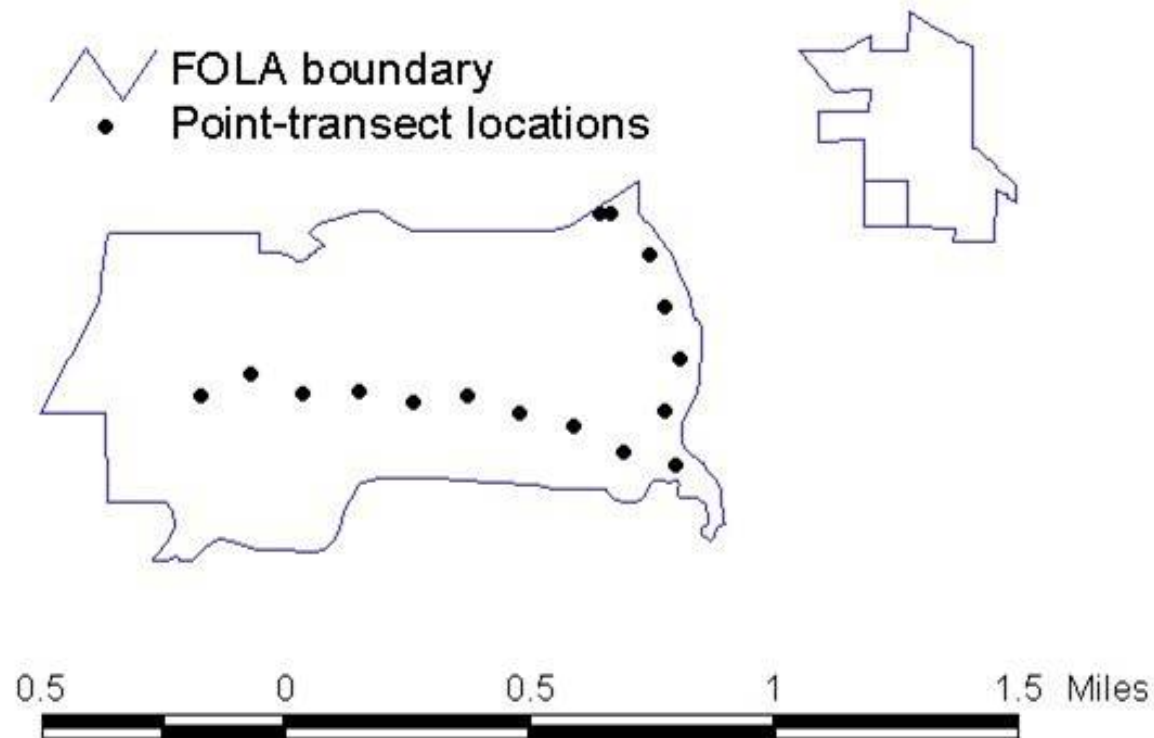
Fort Laramie NHS



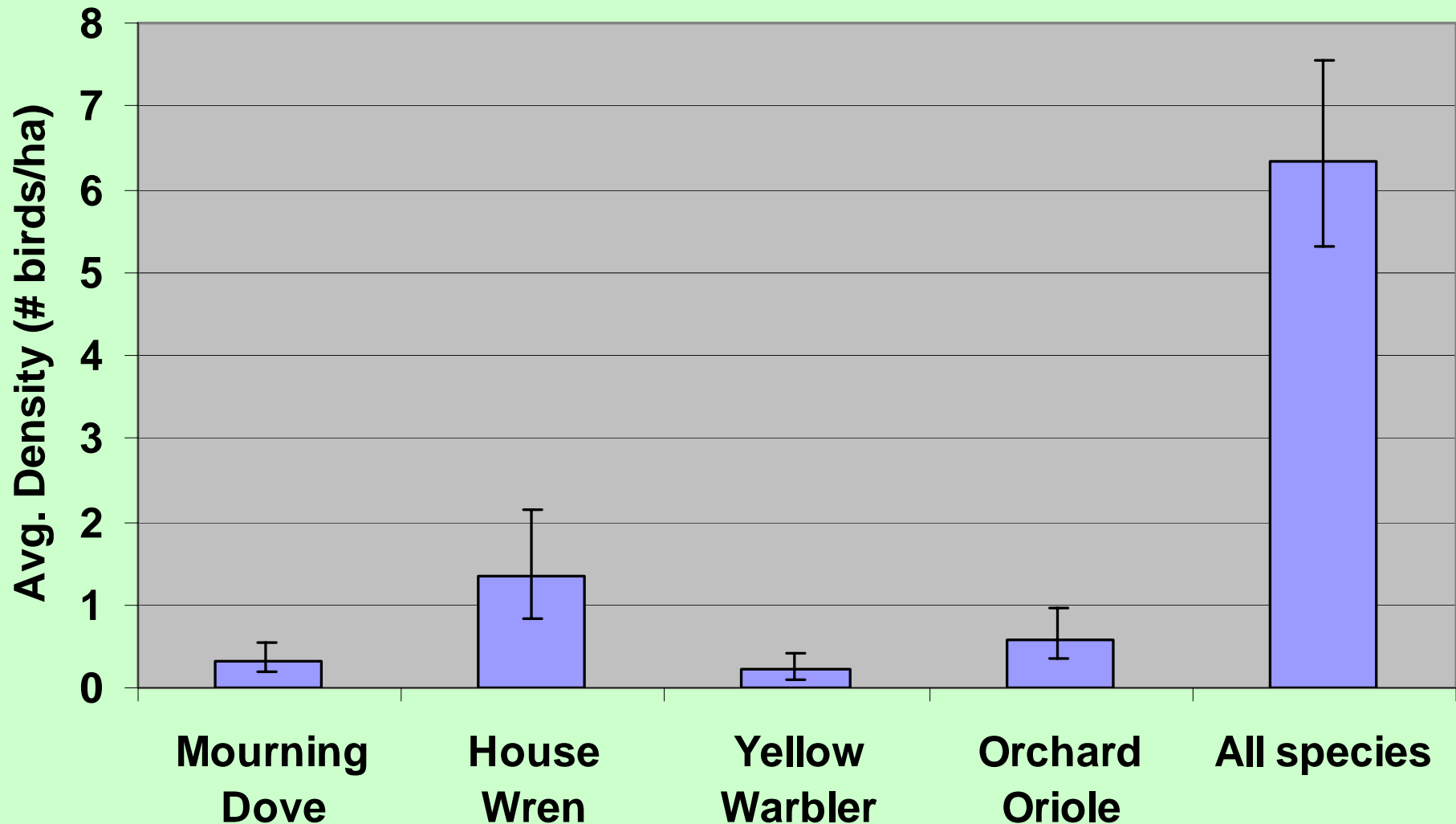
Inventory Results:

- 62 species documented
 - 21 expected species
- Breakdown by habitat association:
 - 41 spp. in riparian habitats
 - 9 spp. in grasslands
 - 4 spp. cliff/rock-dependent
 - 1 spp. in ponderosa pine woodland

Location of point-transect in riparian woodland at Fort Laramie NHS



Estimated densities of breeding birds in riparian woodland at Fort Laramie NHS



Fort Laramie NHS



- Partners In Flight regional conservation priorities:

- Red-headed Woodpecker



- Say's Phoebe



- Loggerhead Shrike



- Lark Bunting



- Lark Sparrow



Fort Laramie NHS

- Riparian Specialists:

- Cooper's Hawk
- Eastern Screech-Owl
- Warbling Vireo
- Yellow Warbler
- Yellow-breasted Chat
- Song Sparrow
- Black-headed Grosbeak
- Lazuli Bunting
- Blue Grosbeak
- Orchard Oriole



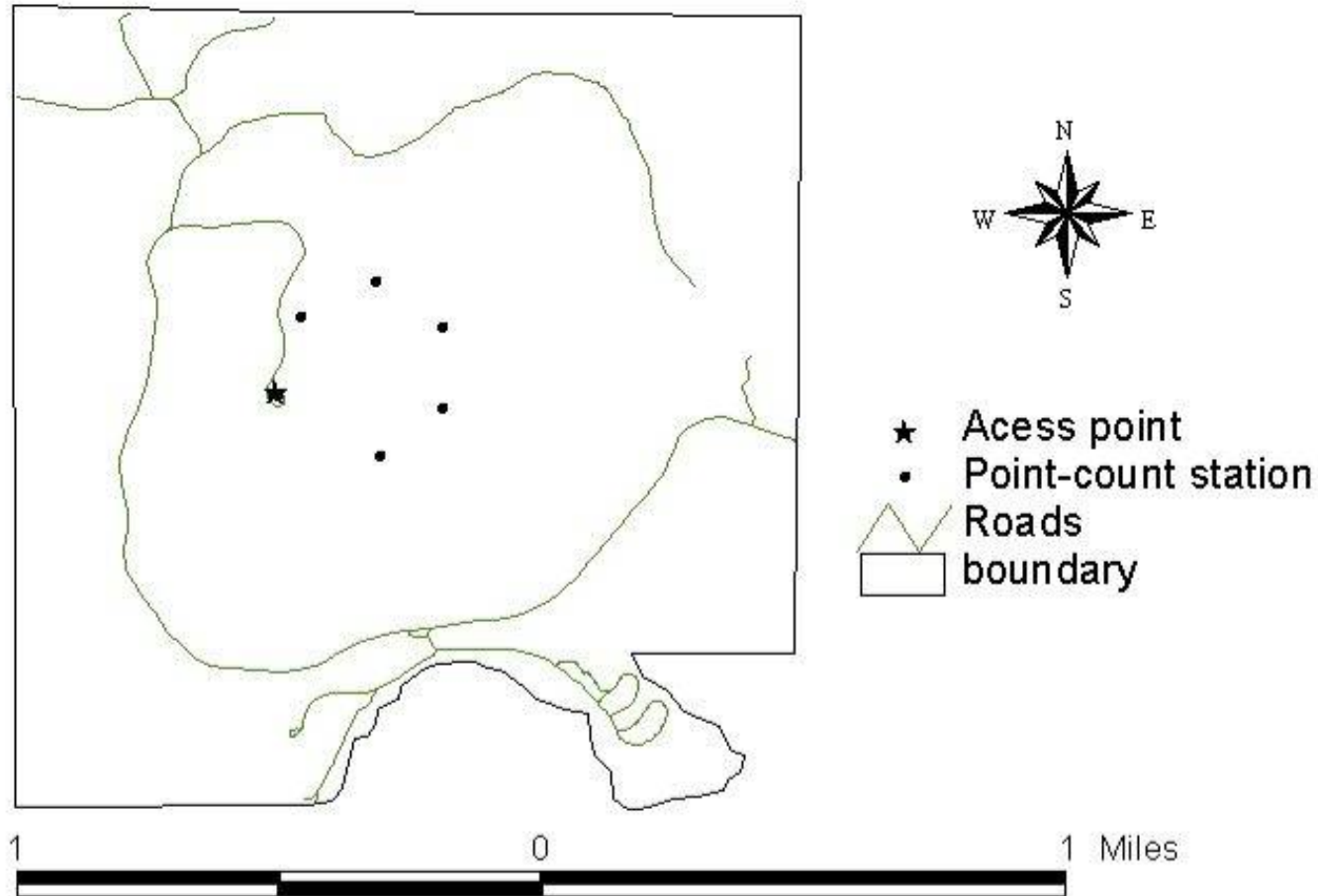
Devil's Tower NM



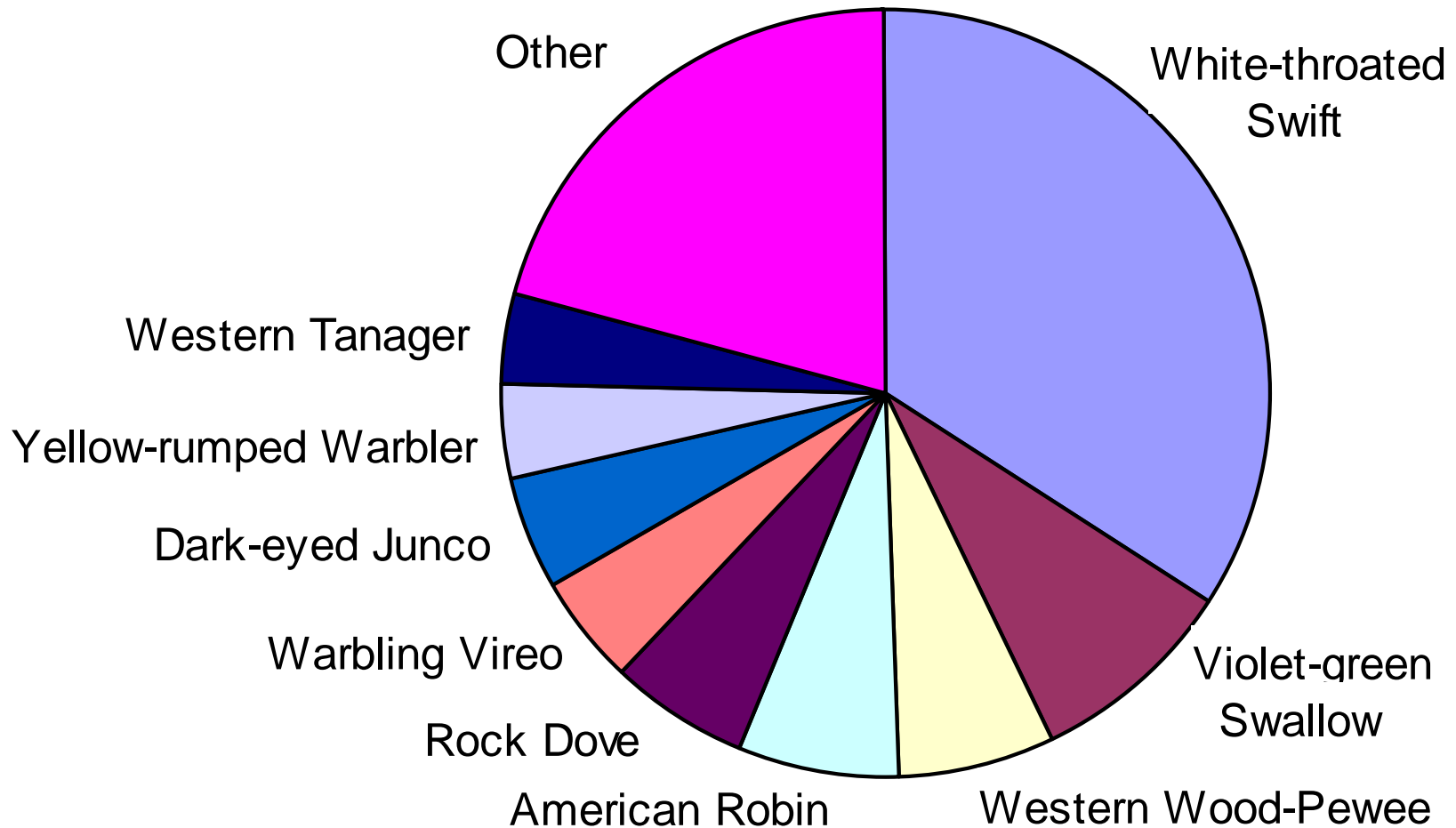
Inventory Results:

- 40 species documented
 - 1 expected species
- Breakdown by habitat association:
 - 12 spp. in riparian habitats
 - 9 spp. in pine forest
 - 7 spp in either pine/riparian
 - 4 spp. in grasslands
 - 4 spp. cliff/rock dependent

Location of point-transect in ponderosa pine woodland at Devil's Tower NM



Relative abundance of breeding birds in ponderosa pine woodland at Devil's Tower NM



Devil's Tower NM

- Partners In Flight regional conservation priorities:

- Red-headed Woodpecker
- White-throated Swift
- Western Meadowlark
- (Prairie Falcon)



- Declining species (BBS '66-'99):

- Red-eyed Vireo, Rock Wren, Northern Flicker, Red-headed Woodpecker, White-throated Swift



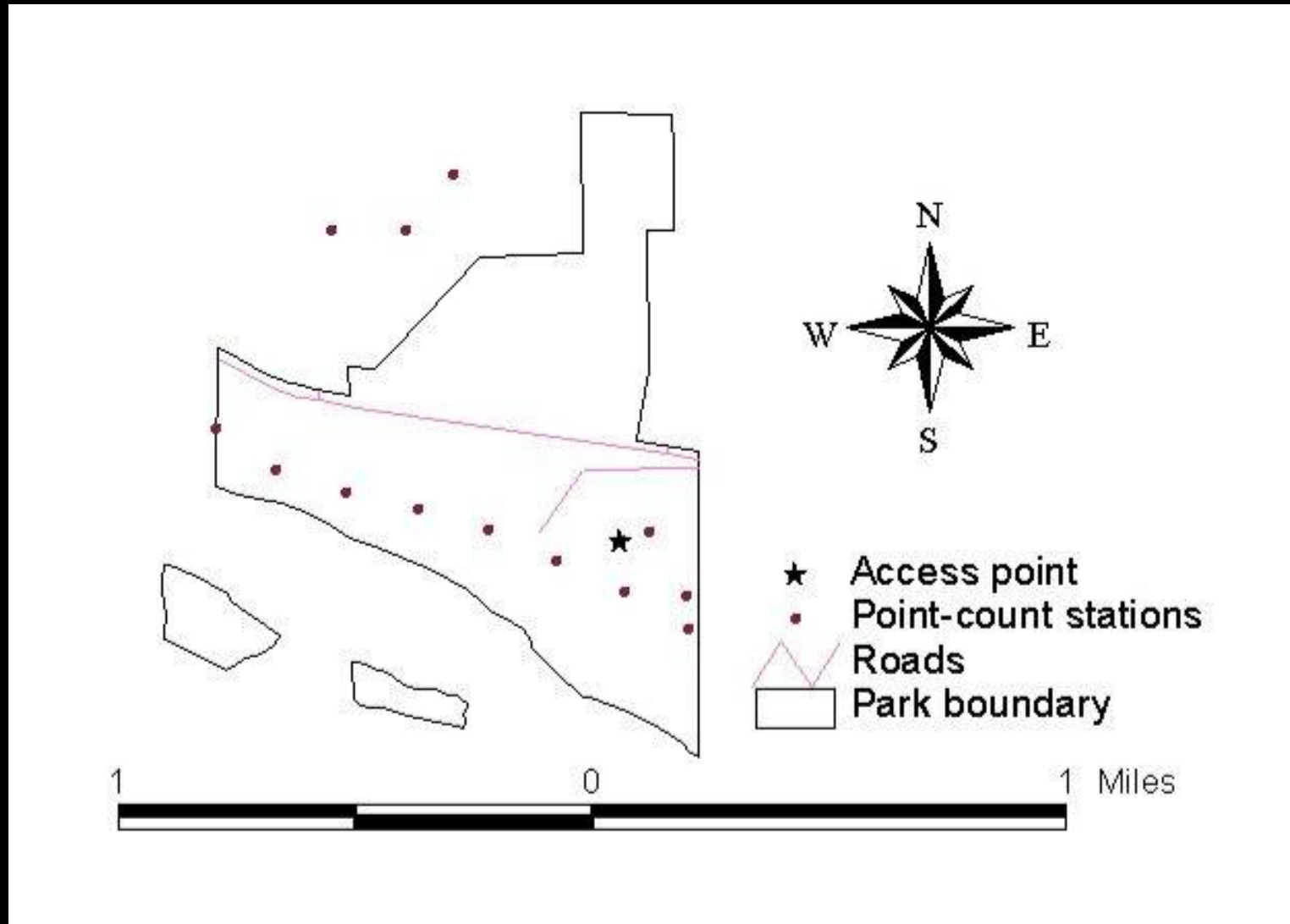
Fort Union Trading Post NHS



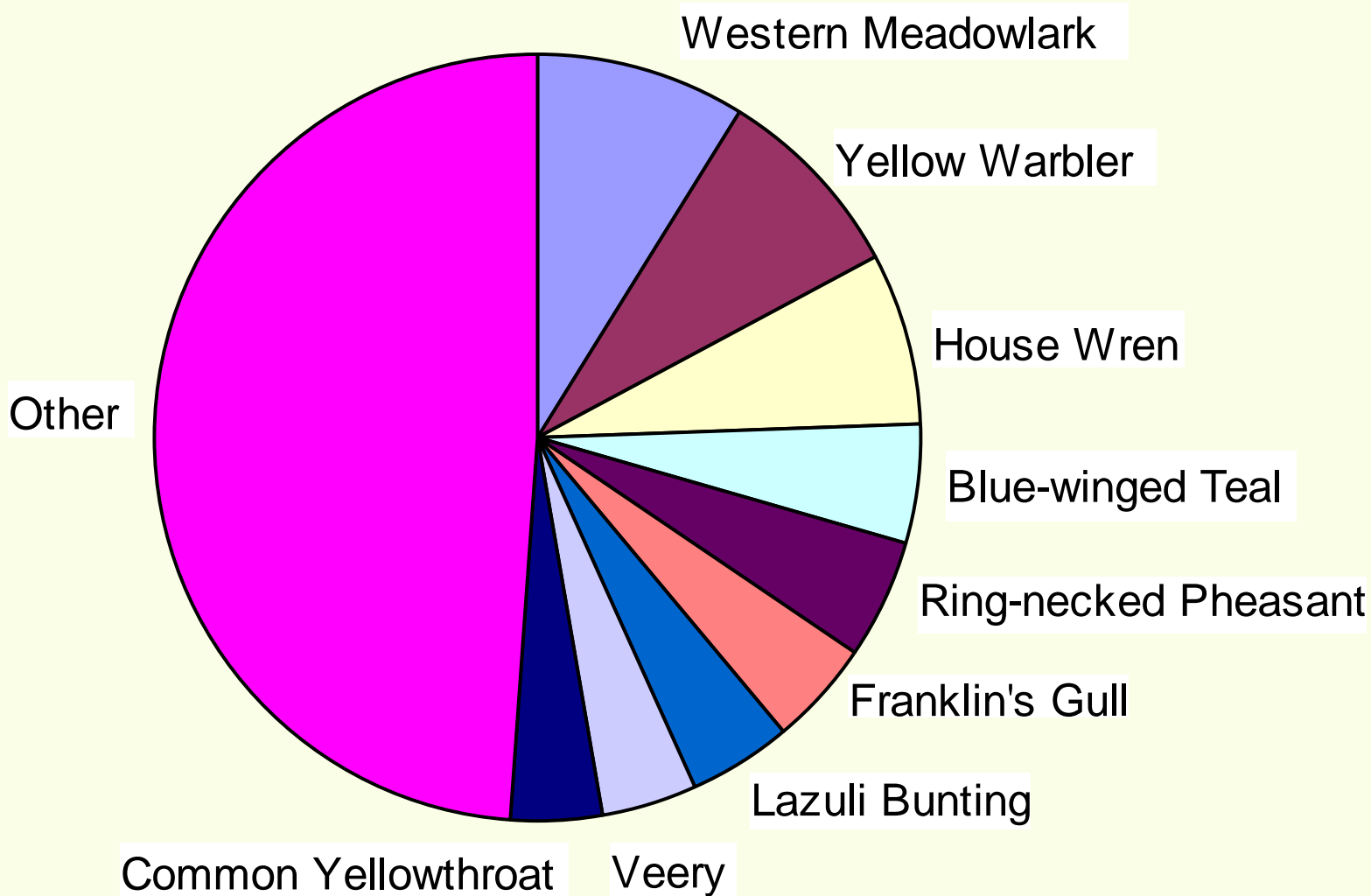
Inventory Results:

- 68 species documented
 - 7 expected species
 - 1 additional species (not doc/exp)
- Breakdown by habitat association:
 - 48 spp. dependent on riparian habitats
 - 11 spp. dependent on grasslands

Location of point-transect in riparian woodland and grassland at Fort Union Trading Post NHS



Relative abundance of breeding birds in riparian woodland and grasslands at Fort Union Trading Post NHS



Fort Union Trading Post NHS



- Partners In Flight regional conservation priorities:

- Wood Duck



- Northern Harrier



- Prairie Falcon



- Red-headed Woodpecker



- Bobolink



Fort Union Trading Post NHS

- Riparian Specialists:

- Sora
- Warbling Vireo
- Gray Catbird
- Veery
- Black-and-white Warbler
- American Redstart
- Yellow Warbler
- Yellow-breasted Chat
- Ovenbird
- Song Sparrow
- Black-headed Grosbeak
- Lazuli Bunting



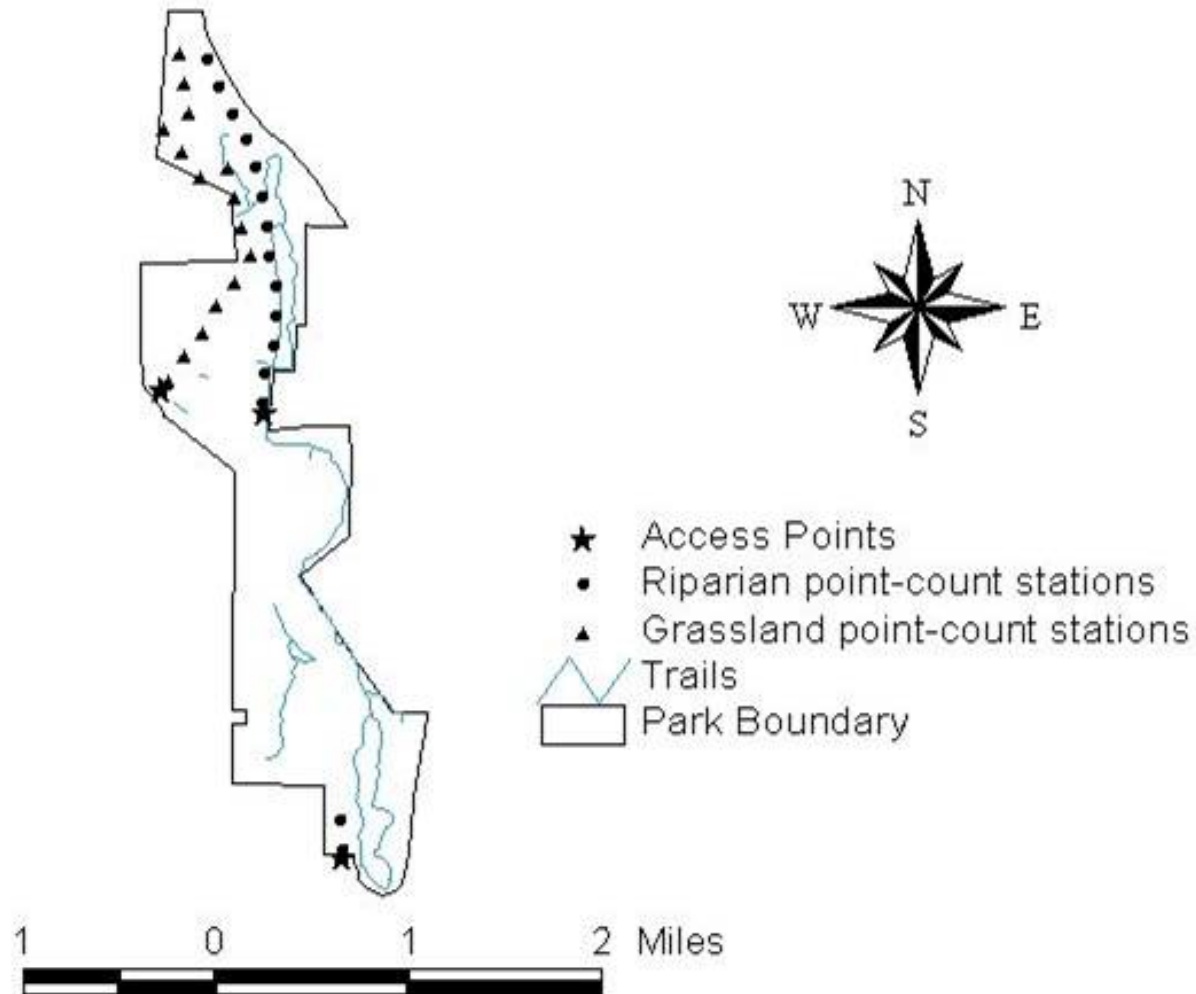
Knife River Indian Villages NHS



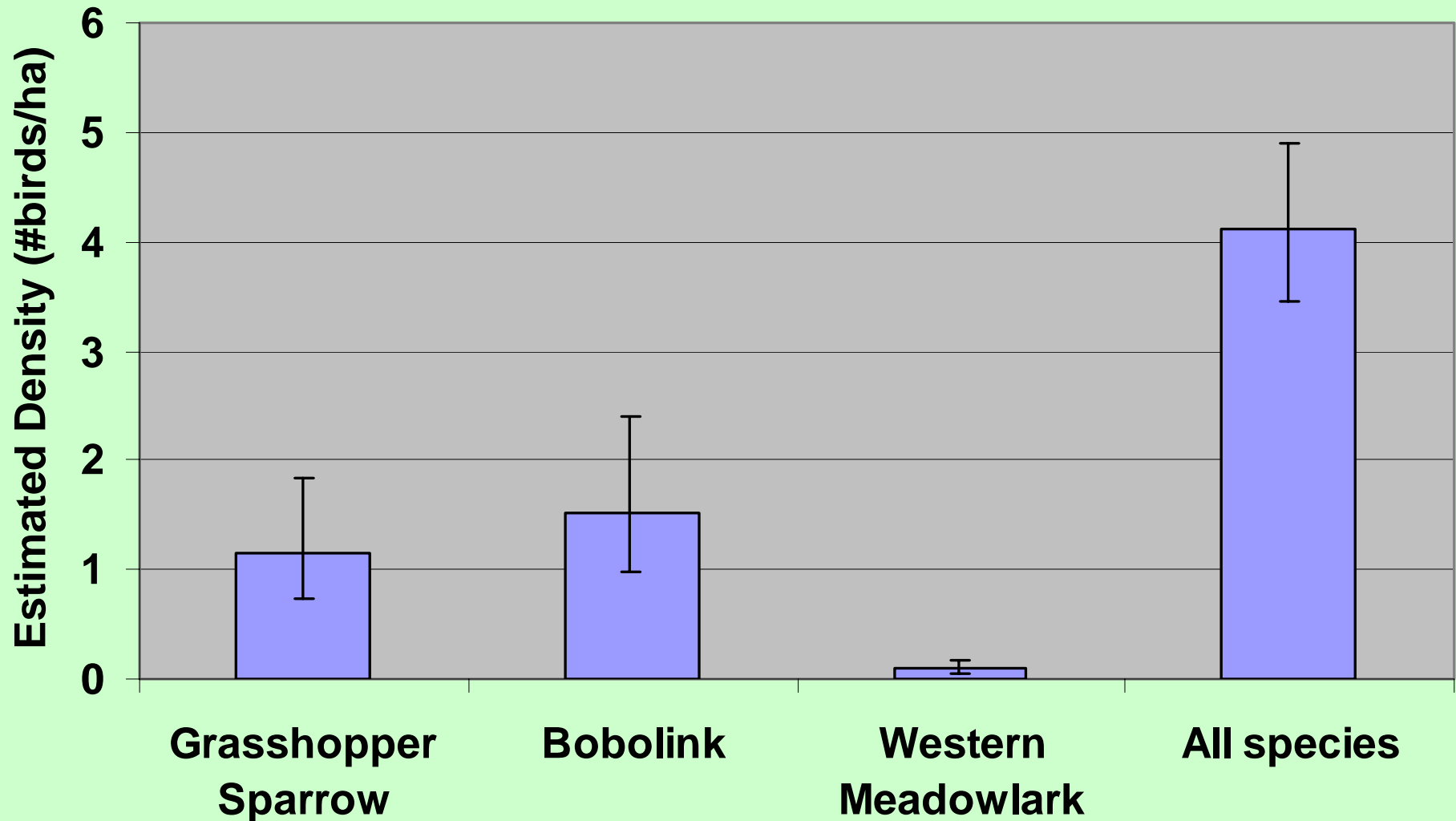
Inventory Results:

- 72 species documented
 - 2 expected species
 - 5 additional species (not doc/exp)
- Breakdown by habitat association:
 - 45 in riparian habitats
 - 14 in grasslands

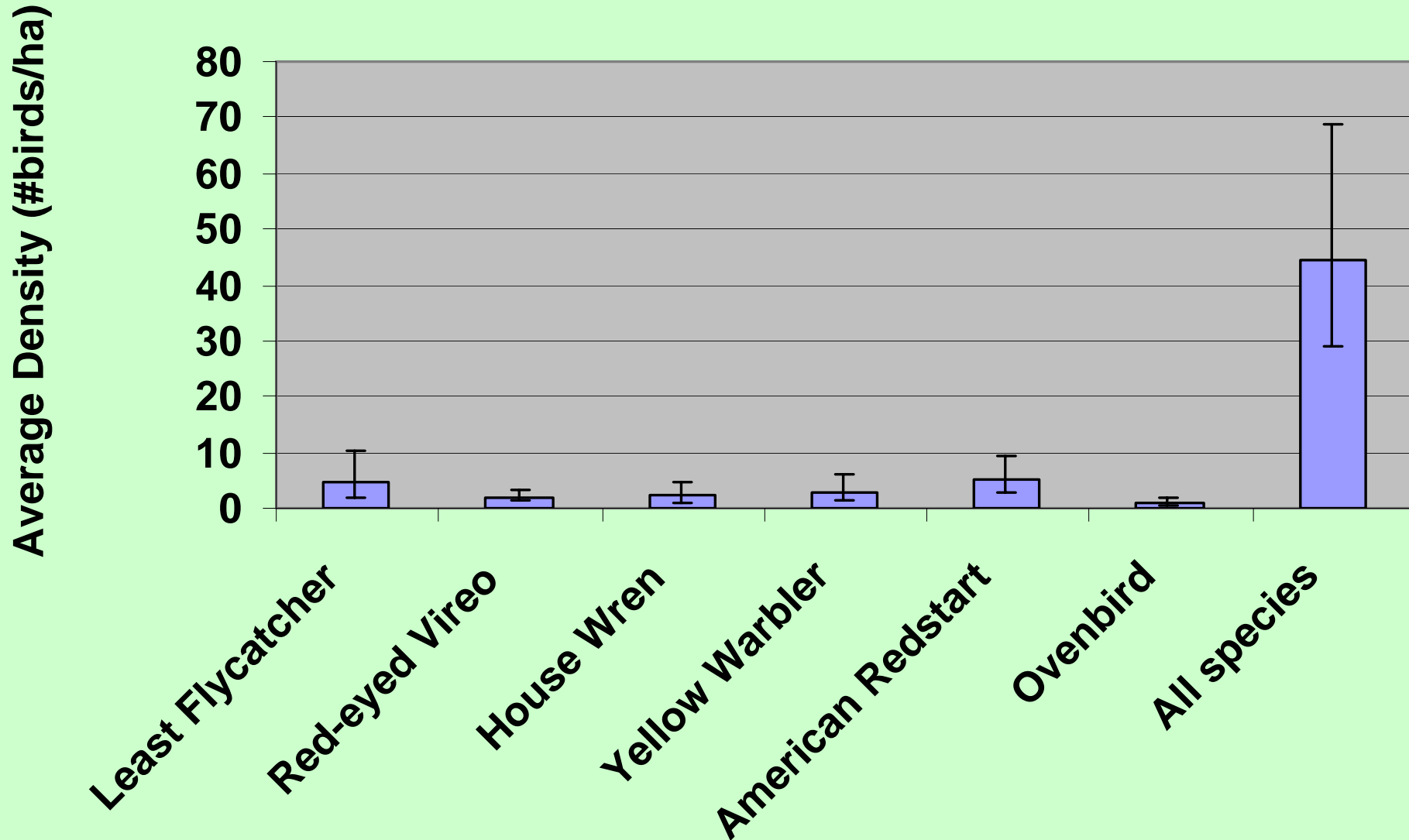
Locations of point-transects in riparian woodland and grasslands at Knife River Indian Villages NHS



Estimated densities of breeding birds in grasslands at Knife River Indian Villages NHS



Estimated densities of breeding birds in riparian woodland at Knife River Indian Villages NHS



Knife River Indian Villages NHS



- Partners In Flight regional conservation priorities:

- Northern Harrier
- Marbled Godwit
- Killdeer
- Upland Sandpiper
- Black-billed Cuckoo
- Northern Rough-winged Swallow
- Bobolink
- Grasshopper Sparrow
- Western Meadowlark



Knife River Indian Villages NHS

- Riparian Specialists:
 - Cooper's Hawk
 - Broad-winged Hawk
 - Eastern Screech-Owl
 - Great Crested Flycatcher
 - Warbling Vireo
 - Red-eyed Vireo
 - Black-and-white Warbler
 - American Redstart
 - Yellow Warbler
 - Yellow-breasted Chat
 - Ovenbird
 - Song Sparrow
 - Black-headed Grosbeak
 - Lazuli Bunting



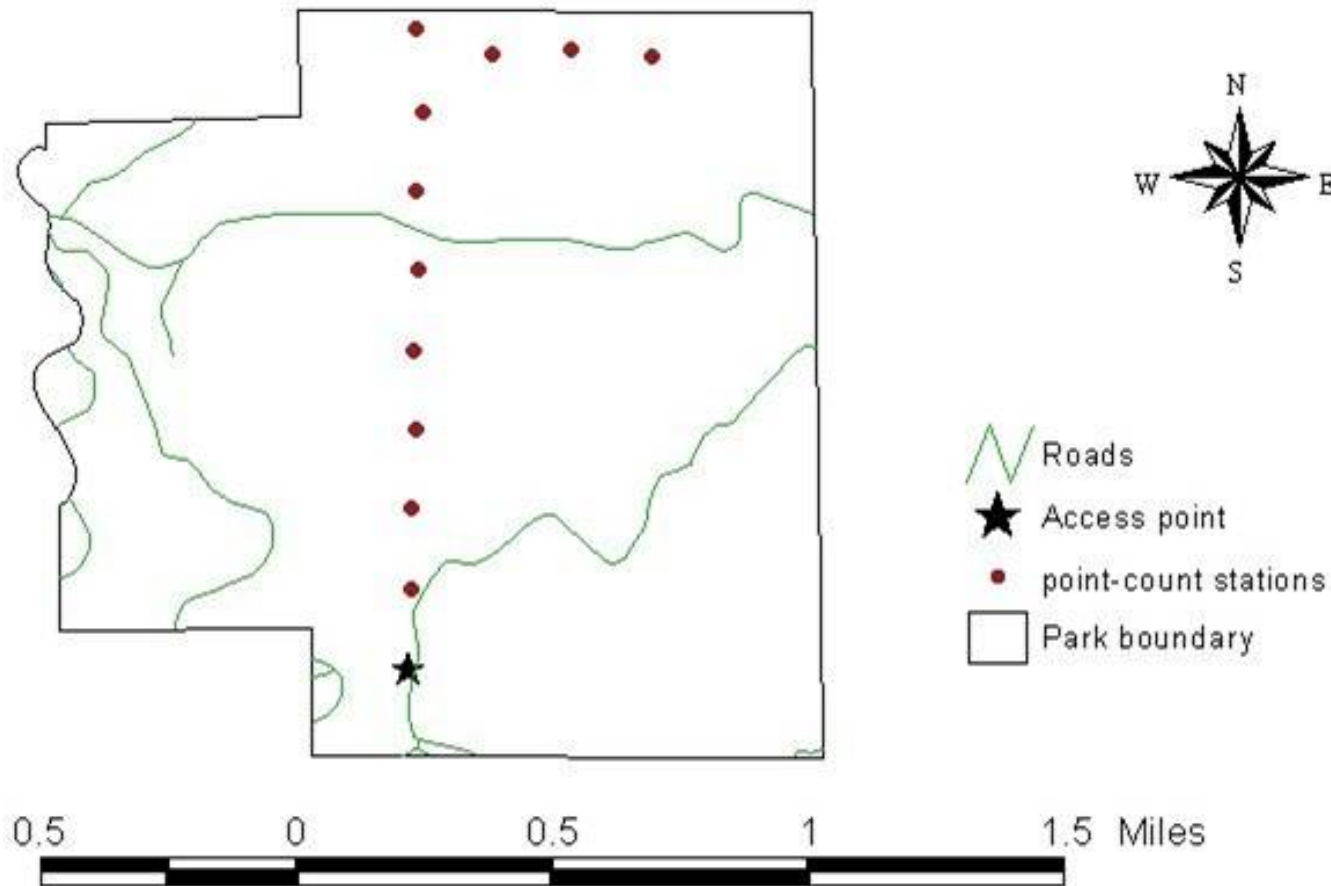
Jewel Cave NM



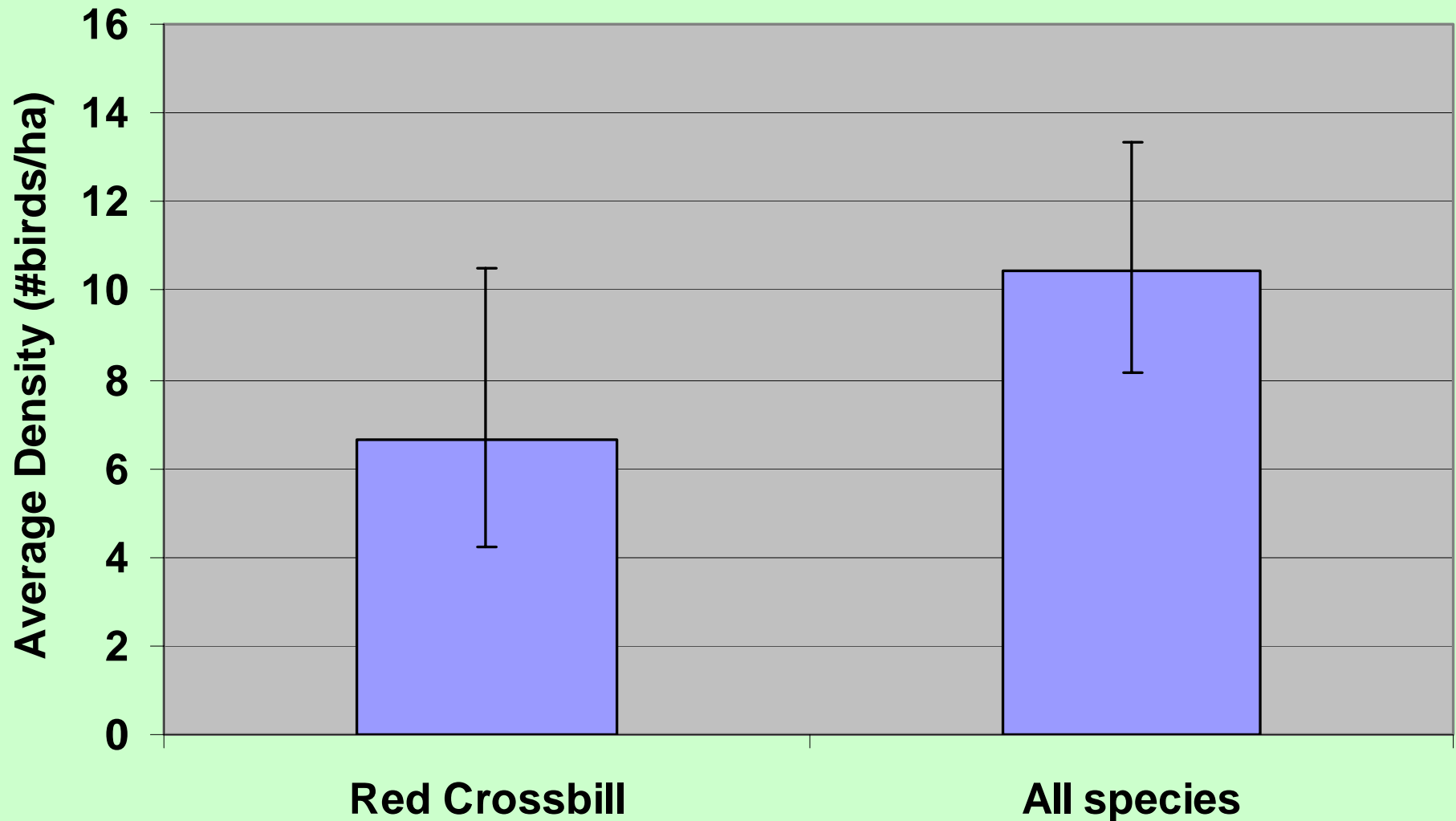
Inventory Results:

- 43 species documented
 - 6 expected species
 - 6 additional species
- Breakdown by habitat association:
 - 21 in ponderosa pine forest (most also in burn)
 - 6 in deciduous vegetation within forest
 - 7 in grassland openings within forest
 - 1 burn-dependent species
 - 3 cliff/rock-dependent
 - 3 generalist/other

Location of point-transect in burned ponderosa pine forest at Jewel Cave NM



Estimated densities of breeding birds in burned ponderosa pine forest at Jewel Cave NM



Jewel Cave NM



- Partners In Flight regional conservation priorities:

- Black-backed Woodpecker



- White-throated Swift



- Mountain Bluebird



- Other noteworthy species:

- Northern Goshawk, Northern Saw-whet Owl ,
Common Poorwill, Western Wood-Pewee, Brown
Creeper, Canyon Wren, Eastern Bluebird, Indigo
Bunting, Field Sparrow

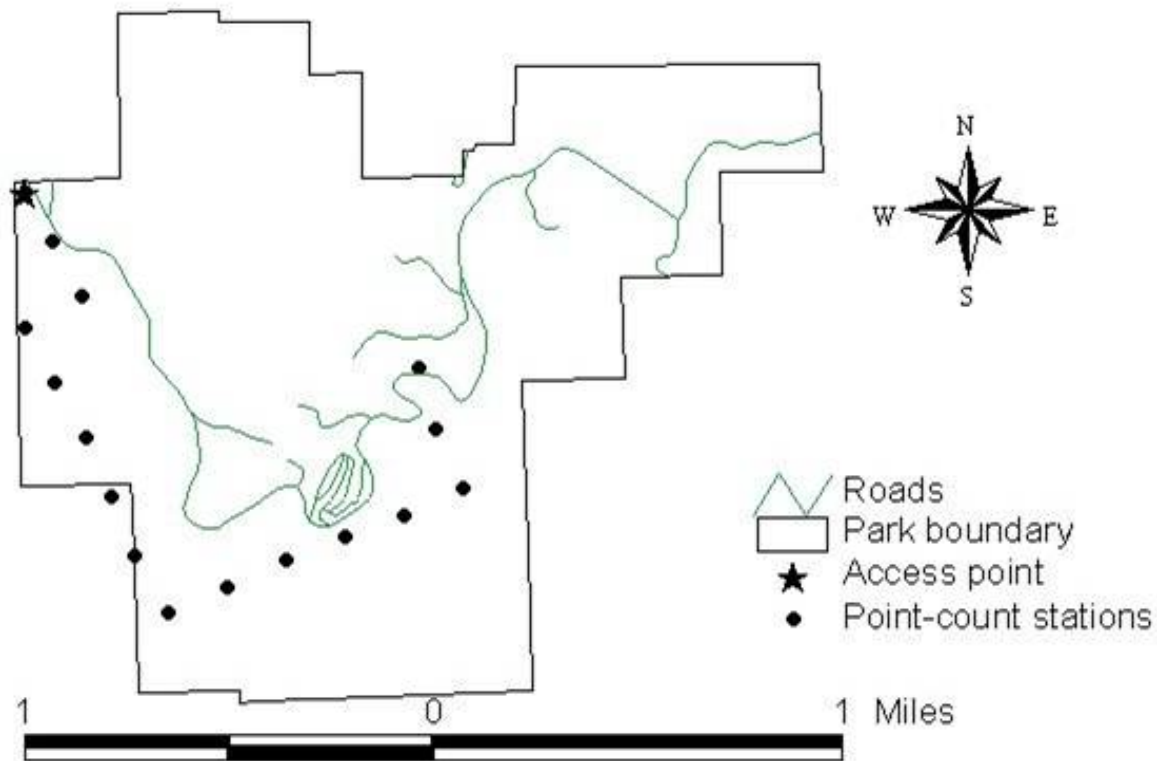
Mount Rushmore NM



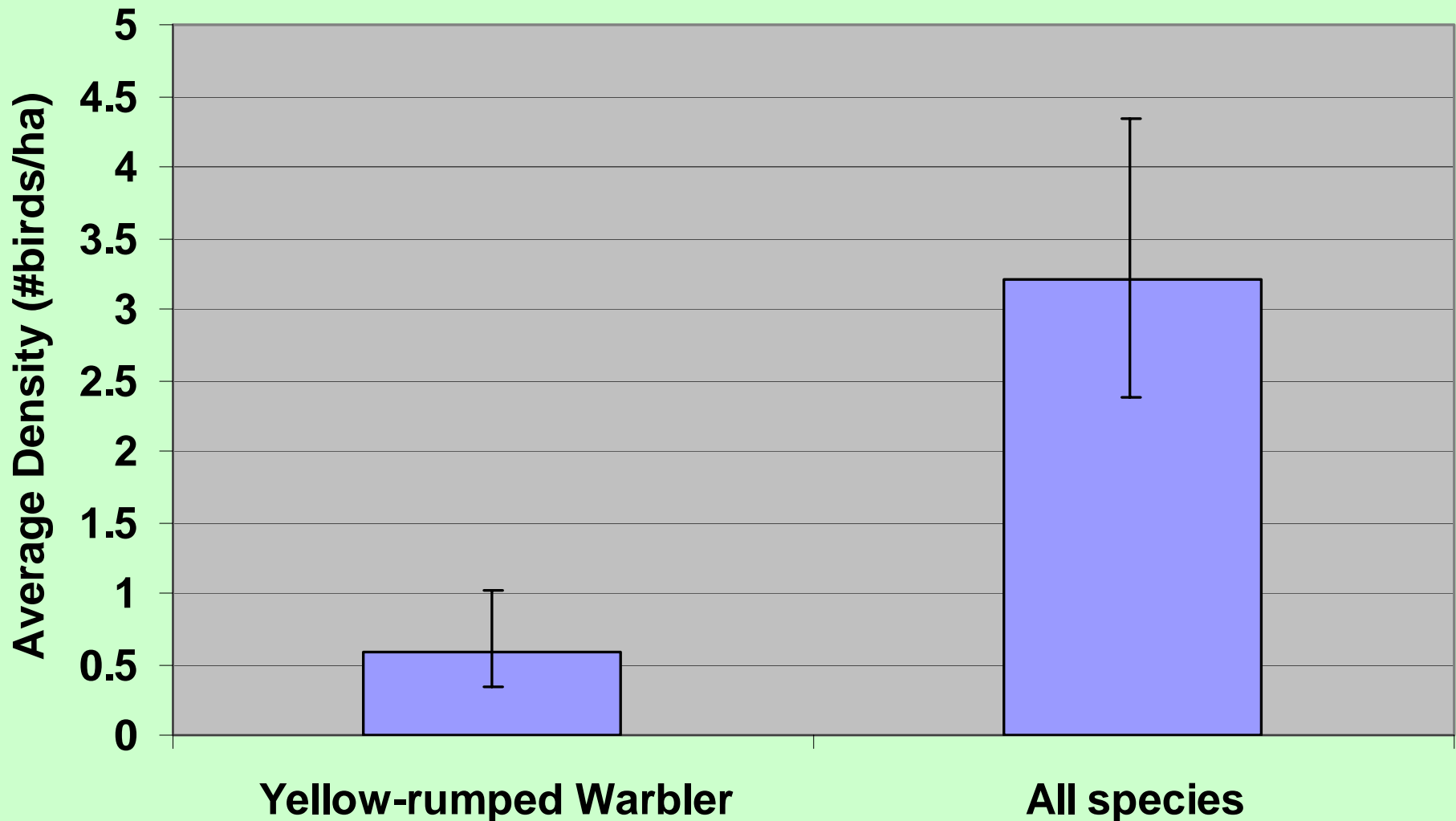
Inventory Results:

- 31 species documented
 - 5 expected species
 - 3 additional species (not doc/exp)
- Breakdown by habitat association:
 - 15 spp. in ponderosa pine forest
 - 5 spp. in broad-leaved vegetation
 - 1 spp. in grasslands openings
 - 4 spp. cliff/rock-dependent
 - 2 spp. dependent on spruce
 - 1 spp. in riparian/wetland

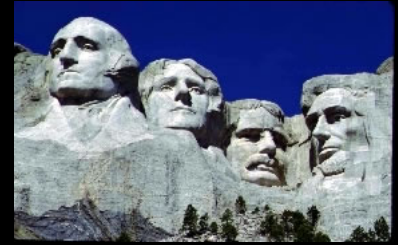
Location of point-transect in ponderosa pine forest at Mount Rushmore NM



Estimated densities of breeding birds in ponderosa pine forest at Mount Rushmore NM



Mount Rushmore NM



- Partners In Flight regional conservation priorities:

- White-throated Swift



- Other noteworthy species:

- Sharp-shinned Hawk, Wild Turkey, Northern Saw-whet Owl, Warbling Vireo, Brown Creeper, Canyon Wren, Rock Wren, Ruby-crowned Kinglet, Swainson's Thrush, Common Yellowthroat, Black-headed Grosbeak

Wind Cave NP



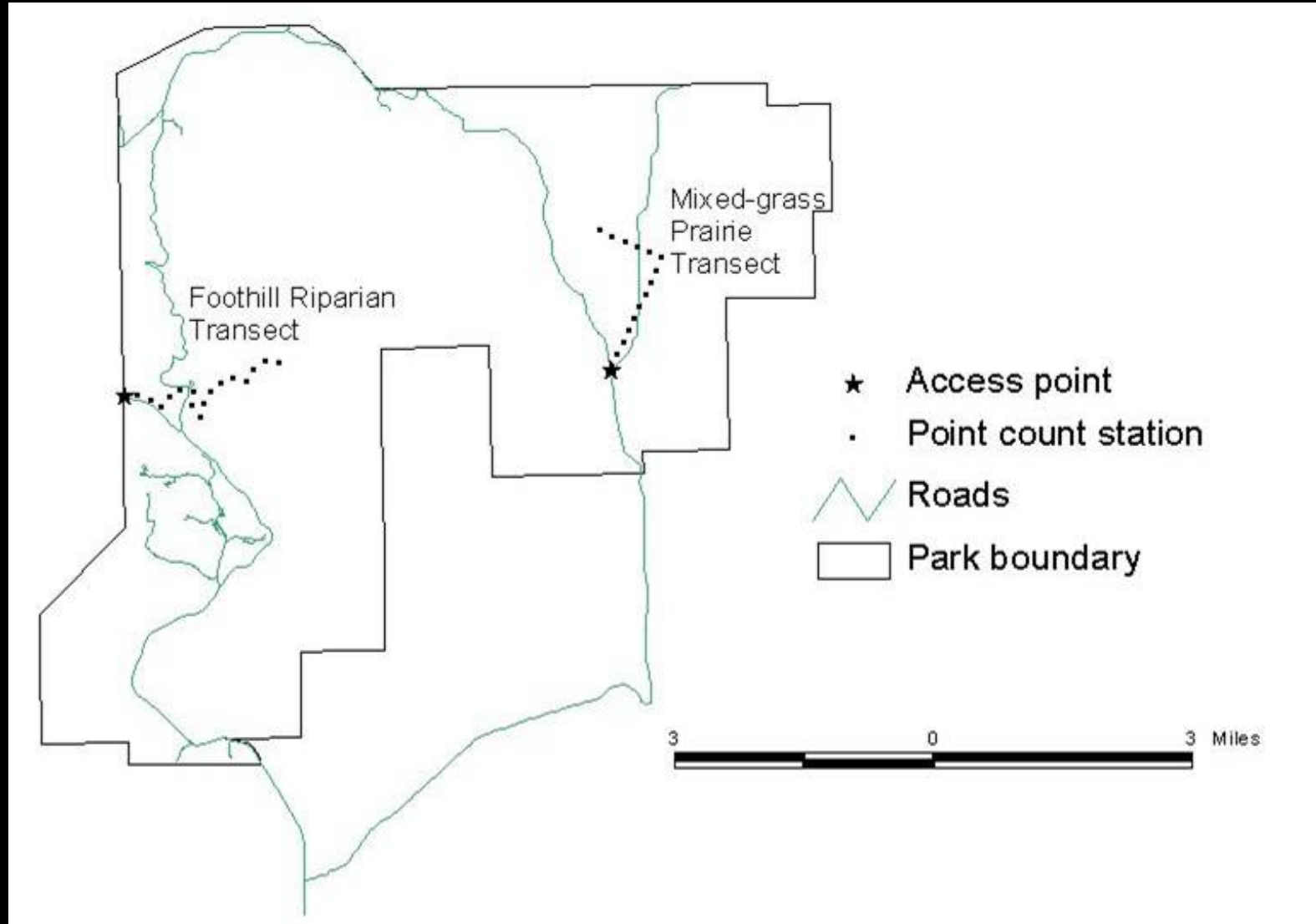
No Inventory effort conducted

2 point-transects:

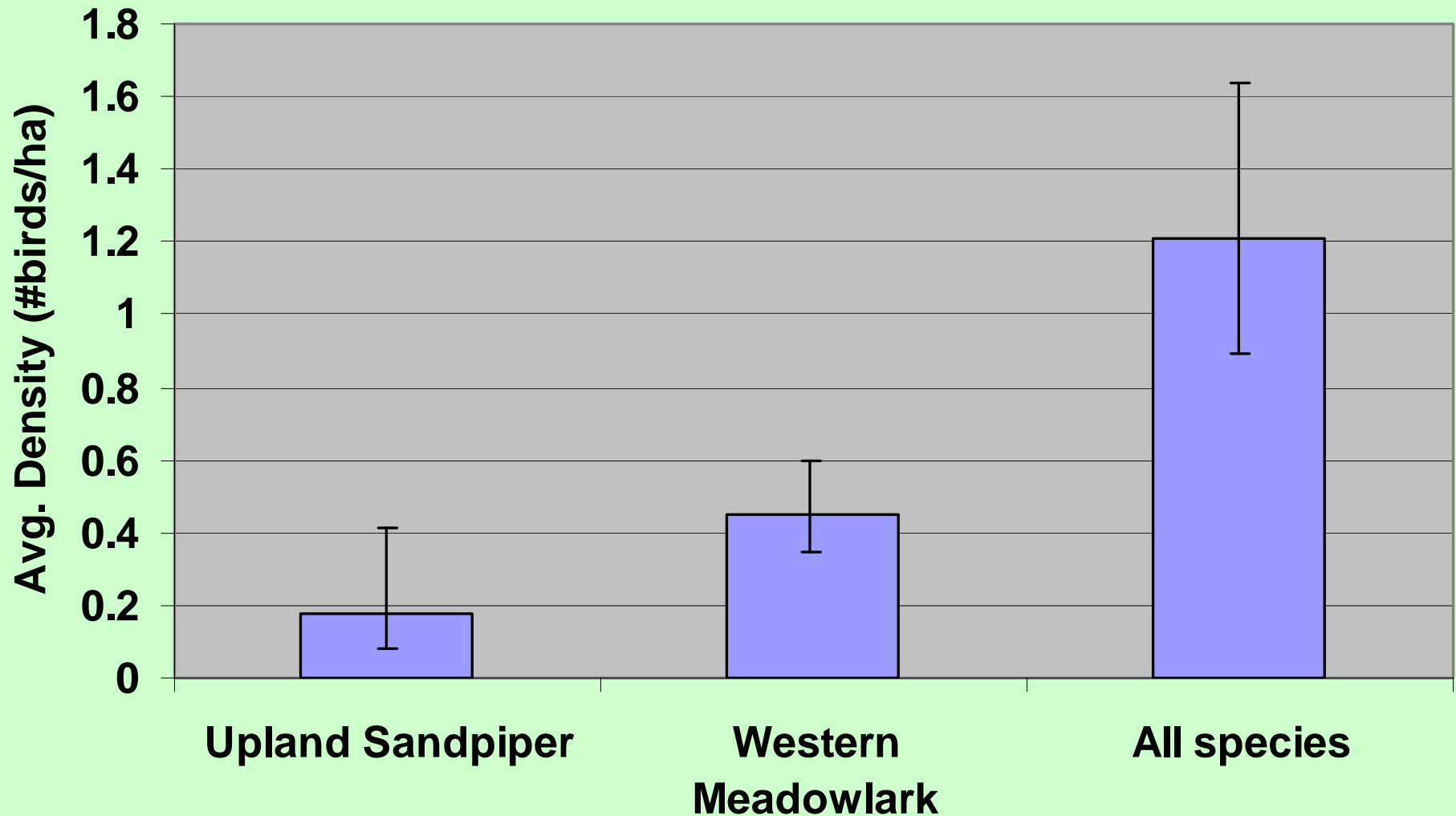
mixed-grass prairie

foothill riparian woodland

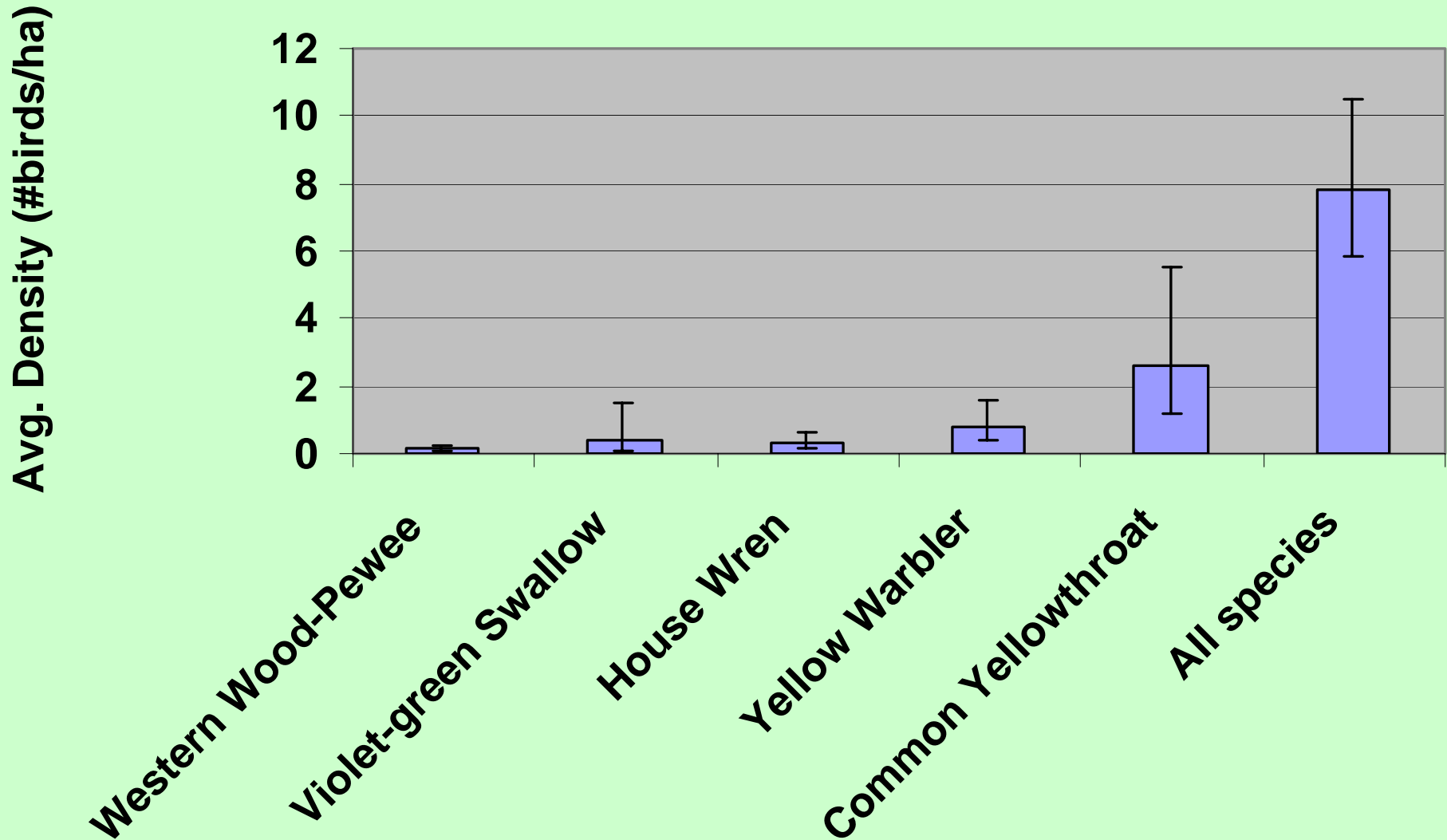
Location of point-transects in mixed-grass prairie and foothill riparian habitats at Wind Cave NP



Estimated densities of breeding birds in mixed-grass prairie at Wind Cave NP



Estimated densities of breeding birds in mixed-grass prairie at Wind Cave NP

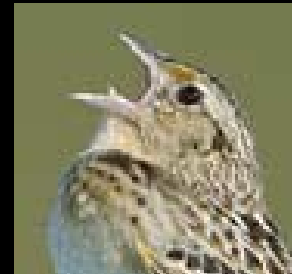


Wind Cave NP



- Partners In Flight regional conservation priorities:

- Upland Sandpiper
- Sharp-tailed Grouse
- (Burrowing Owl)
- Red-headed Woodpecker
- Grasshopper Sparrow
- Western Meadowlark



- Other species of interest:

- Eastern Phoebe, Alder Flycatcher (transient migrant), Western Wood-Pewee, Red-eyed Vireo, Canyon Wren, Gray Catbird, American Redstart



Questions?